SystemC CCI WG Parameter Reset
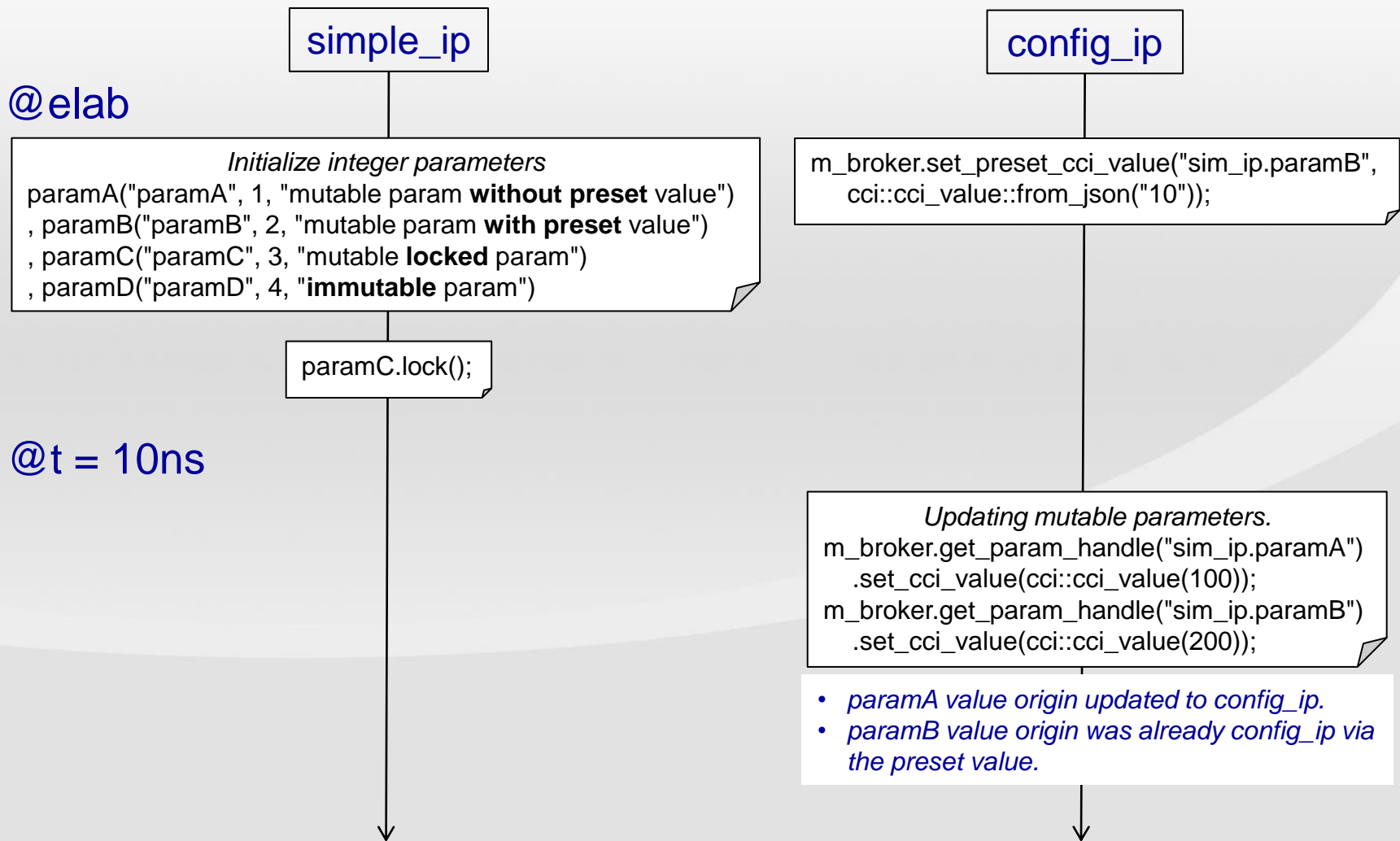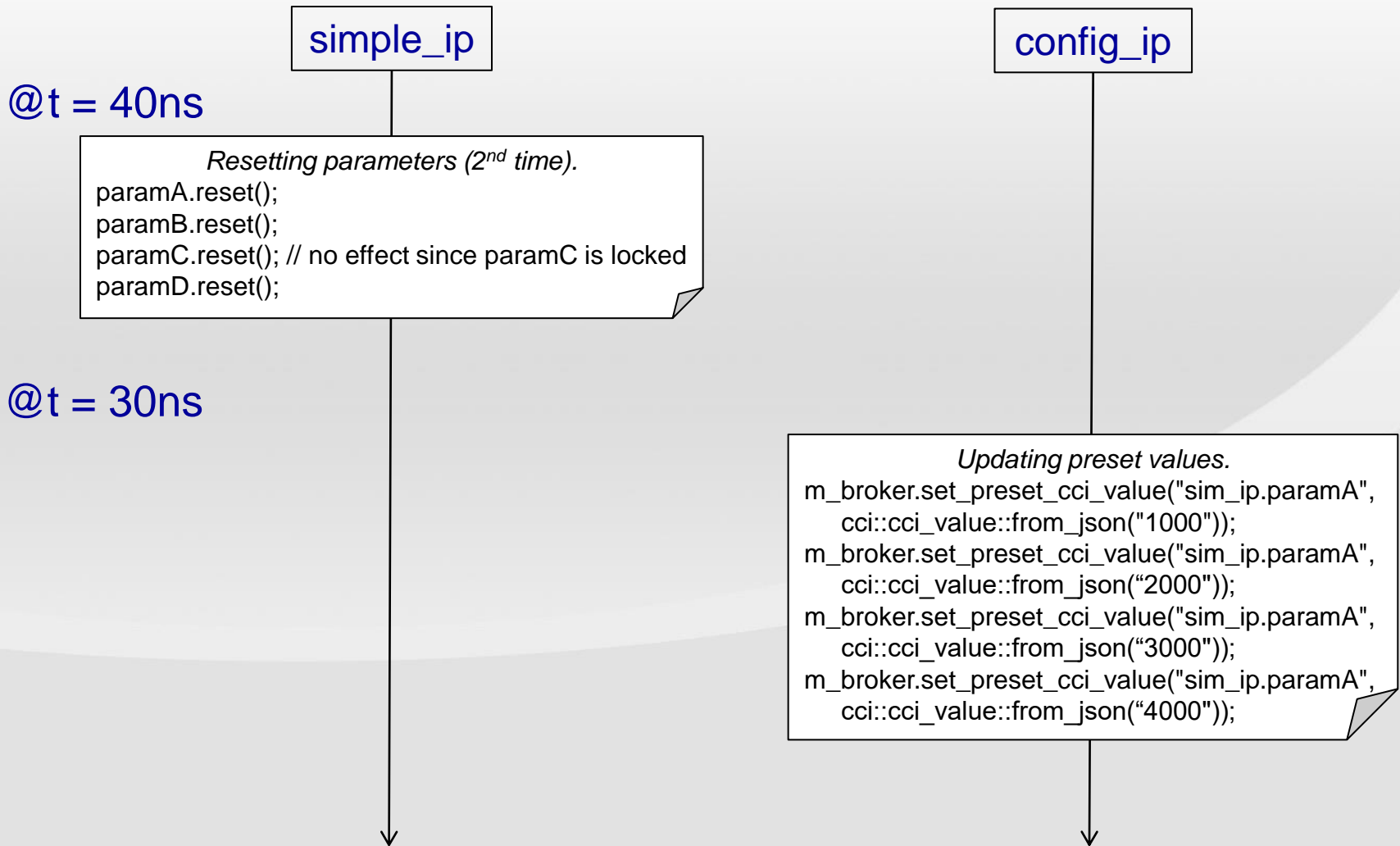
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Parameter Reset

- **This example shows the effects of reset, specifically:**
  - Update of value
  - Update of value origin
  - Triggering of parameter write callbacks
  - Note: a "parameter tracker" uses parameter callbacks to report this information.

- **Variations in behavior are shown for the following parameter types and configurations:**
  - Mutable and immutable
    Note: Mutable parameters can be reset
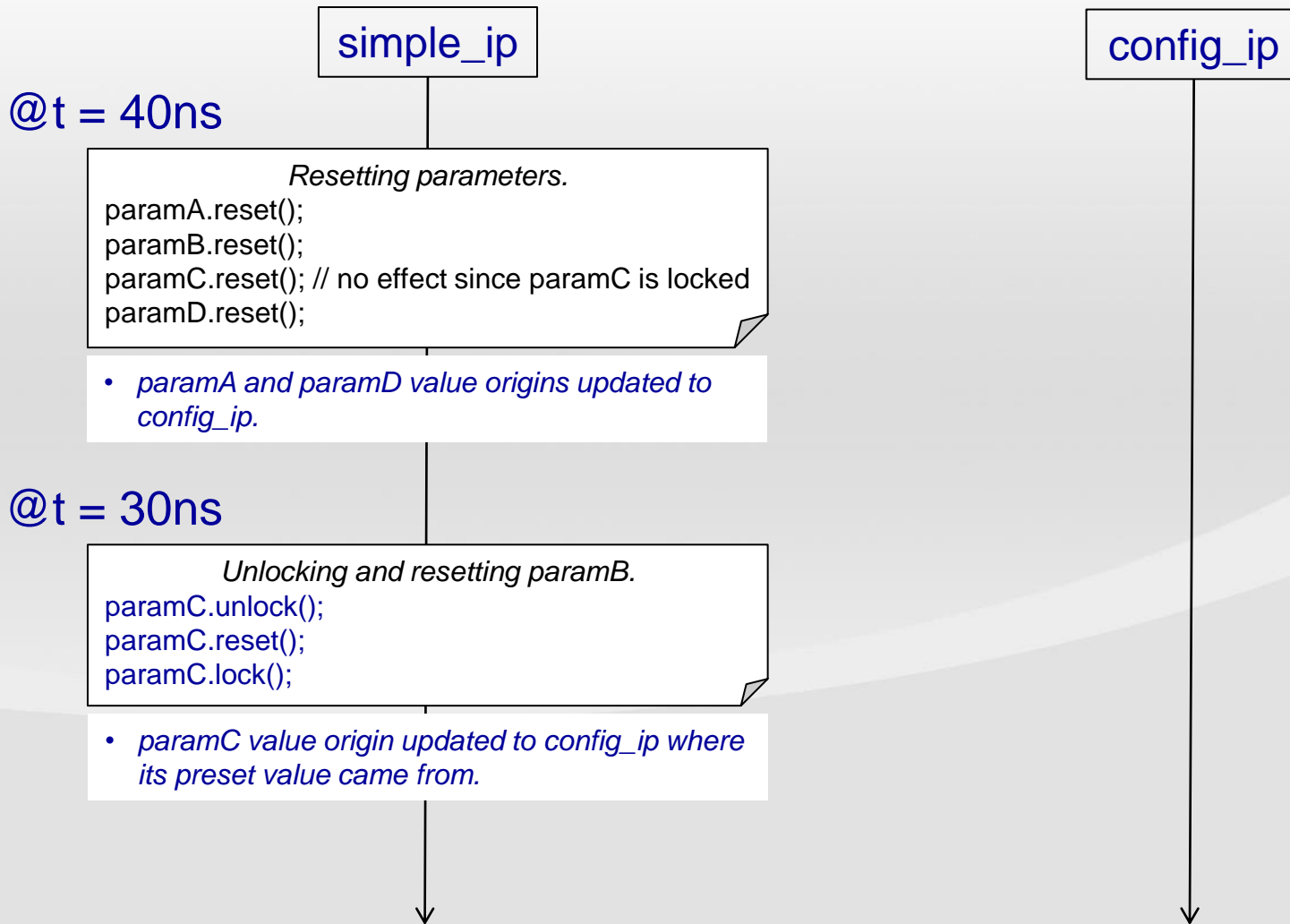 - With preset values
  - Locked

Example Sequence Diagram

simple_ip

config_ip

@elab

> *Initialize integer parameters*
> paramA("paramA", 1, "mutable param **without preset** value")
> , paramB("paramB", 2, "mutable param **with preset** value")
> , paramC("paramC", 3, "mutable **locked** param")
> , paramD("paramD", 4, "**immutable** param")

> m_broker.set_preset_cci_value("sim_ip.paramB",
>   cci::cci_value::from_json("10"));

> paramC.lock();

@t = 10ns

> *Updating mutable parameters.*
> m_broker.get_param_handle("sim_ip.paramA")
>   .set_cci_value(cci::cci_value(100));
> m_broker.get_param_handle("sim_ip.paramB")
>   .set_cci_value(cci::cci_value(200));

- *paramA value origin updated to config_ip.*
- *paramB value origin was already config_ip via the preset value.*

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Example Sequence Diagram – cont'd

simple_ip

config_ip

@t = 40ns

> *Resetting parameters (2nd time).*
> paramA.reset();
> paramB.reset();
> paramC.reset(); // no effect since paramC is locked
> paramD.reset();

@t = 30ns

> *Updating preset values.*
> m_broker.set_preset_cci_value("sim_ip.paramA",
>   cci::cci_value::from_json("1000"));
> m_broker.set_preset_cci_value("sim_ip.paramA",
>   cci::cci_value::from_json("2000"));
> m_broker.set_preset_cci_value("sim_ip.paramA",
>   cci::cci_value::from_json("3000"));
> m_broker.set_preset_cci_value("sim_ip.paramA",
>   cci::cci_value::from_json("4000"));

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Example Sequence Diagram – cont'd

simple_ip

config_ip

@t = 40ns

> *Resetting parameters.*
> paramA.reset();
> paramB.reset();
> paramC.reset(); // no effect since paramC is locked
> paramD.reset();

- *paramA and paramD value origins updated to config_ip.*

@t = 30ns

> *Unlocking and resetting paramB.*
> paramC.unlock();
> paramC.reset();
> paramC.lock();

- *paramC value origin updated to config_ip where its preset value came from.*

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Expected Output (`ex24_Reset_Param.log`)

```
SystemC Simulation

Info: cfg_ip: @0 s, Setting up sim_ip.paramB's preset value to 10

Info: sim_ip: @0 s, Parameter construction complete.

[PTRK @ 0 s] Tracking sim_ip.paramA

  handle originator: sc_main

  description: mutable param without preset value

  value: 1; is default

  value origin: sim_ip

[PTRK @ 0 s] Tracking sim_ip.paramB

  handle originator: sc_main

  description: mutable param with preset value

  value: 10; is preset

  value origin: cfg_ip

[PTRK @ 0 s] Tracking sim_ip.paramC

  handle originator: sc_main

  description: mutable locked param

  value: 3; locked; is default

  value origin: sim_ip
```

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Expected Output - continued

```
[PTRK @ 0 s] Tracking sim_ip.paramD

  handle originator: sc_main

  description: immutable param

  value: 4; is default

  value origin: sim_ip


Info: sc_main: Begin Simulation.

Info: cfg_ip: @10 ns, Updating mutable parameters.

[PTRK @ 10 ns] sim_ip.paramA value updated:

  value: 100

  value origin: cfg_ip

[PTRK @ 10 ns] sim_ip.paramB value updated:

  value: 200

Info: sim_ip: @20 ns, Resetting parameters.

[PTRK @ 20 ns] sim_ip.paramA value updated:

  value: 1; is default

  value origin: sim_ip
```

Expected Output - continued

```
[PTRK @ 20 ns] sim_ip.paramB value updated:

  value: 10; is preset

[PTRK @ 20 ns] sim_ip.paramD value updated:

  value: 4; is default

Info: cfg_ip: @30 ns, Updating preset values.

Info: sim_ip: @40 ns, Resetting parameters.

[PTRK @ 40 ns] sim_ip.paramA value updated:

  value: 1000; is preset

  value origin: cfg_ip

[PTRK @ 40 ns] sim_ip.paramB value updated:

  value: 2000; is preset

[PTRK @ 40 ns] sim_ip.paramD value updated:

  value: 4000; is preset

  value origin: cfg_ip

Info: sim_ip: @50 ns, Unlocking and resetting paramC.

[PTRK @ 50 ns] sim_ip.paramC value updated:

  value: 3000; is preset

  value origin: cfg_ip

Info: sc_main: End Simulation.
```